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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/774,045	02/06/2004	Issei Shinmura	1217-040224	4989

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EXAMINER

RODEE, CHRISTOPHER D

ART UNIT PAPER NUMBER

1756

DATE MAILED: 01/18/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/774,045

Applicant(s)

SHINMURA ET AL.

Examiner

Christopher RoDee

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. ____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 7/22/04 12/19/05
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 10 and 12 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 10 and 12 are indefinite as presented because the units of "Φm" are not described in the specification nor are they conventional according to SI standards. Clarification is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 3-5, 7-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 09-211897 in view of JP 02-000083 and further in view of Diamond, Arthur S & David Weiss (eds.) *Handbook of Imaging Materials* pp. 214-222, 227, & 228.

JP '897 discloses a ferrite carrier having the formula $(\text{Fe}_2\text{O}_3)_x(\text{A})_y(\text{B})_z$ where A is MgO, B is MnO, $0.2 \leq x \leq 0.95$, $0.005 \leq y \leq 0.3$, and $x+y+z \leq 1$ (see Abstract and ¶ [0029]). Specific carriers shown in Table 1 (¶ [0106]) have combinations of MgO and MnO with Fe_2O_3 as the ferrite. The carrier has a resistance of at least $1.2 \times 10^8 \Omega\text{cm}$ (¶ [0060] – [0061]). The carrier has a particle size of 50 μm or less (¶ [0062]). As seen in the examples, the carrier particles are formed by calcining (¶ [0100]), which would appear to give a oxidized surface to the carrier. The carrier is mixed with a toner of 8 μm particle size or less (¶ [0066]). The JP reference also discloses the development of an electrostatic latent image with an applied AC/DC voltage in document claims 3 and 4. Because the ferrite is a soft ferrite it would appear to have little or no residual magnetization or coercive force.

The primary JP reference does not disclose the addition of ZrO_2 to the ferrite but JP '083 teaches that the addition of fine oxide particles to the surface of the ferrite particles reduces the dependency of carrier specific resistance on electric fields and improved carrier fluidity. This oxide is added to the carrier followed by sintering to fix the ZrO_2 to the surface of the carrier. The Examples on page 6 of this JP document appear to use .2 and .4 parts of an additive oxide per 100 parts of the carrier. This appears to form oxide layers on the surface of the carrier.

The primary reference also does not specify the magnetization of the carrier core but Diamond teaches ferrites typically have a magnetic saturation of 30 to 96 emu/g (Am^2/kg) (Table 6.2). The magnetization is adjusted to give control of the stiffness of the magnetic brush for the developer as well as the developer pickup on the brush (pp. 217 & 219).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to add ZrO_2 to the ferrite because the supporting JP '083 document teaches that this reduces the dependency of carrier specific resistance on electric fields and also improves carrier fluidity. It would also have been obvious to adjust the saturation

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magnetization of the carrier within the range disclosed as effective by Diamond because this permits the carrier to have a desired stiffness and developer pickup characteristics during development.

Claims 2 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 09-211897 in view of JP 02-000083 and further in view of Diamond, Arthur S & David Weiss (eds.) *Handbook of Imaging Materials* pp. 214-222, 227, & 228 as applied to claims 1, 3, 5, 8-10, and 12 above, and further in view of Takiguchi *et al.* in US Patent 6,316,156.

The JP documents and Diamond & Weiss were discussed above. These references do not disclose the addition of Bi_2O_3 to the ferrite but Takiguchi teaches that Bi_2O_3 is usefully included in MnO ferrites to control the electrical resistance of the carrier (col. 9, l. 17-27). Takiguchi suggests 0.01 to 3.0 mol % based on the ferrite composition.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to include Bi_2O_3 in the formation of the ferrite of Takiguchi because this material aids in the control of the electrical resistance of the carrier. The primary JP reference is specifically concerned with maintaining certain electrical resistance characteristics, as noted above, and the artisan would turn to those teachings in the art to aid in obtaining these desired characteristics.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christopher RoDee whose telephone number is 571-272-1388. The examiner can normally be reached on most weekdays from 6:00 to 4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Huff can be reached on 571-272-1385. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

cdr
10 January 2006


CHRISTOPHER RODEE
PRIMARY EXAMINER